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Aircraft Certification Systems Evaluation Program (ACSEP) FY 2000 Report

Prepared by
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EXECUTIVE SUMMARY

This report documents the fiscal year (FY) 2000 results of the Federal Aviation Administration (FAA) Aircraft Certification Service (AIR) Aircraft Certification Systems Evaluation Program (ACSEP).

The ACSEP was designed to determine if FAA production approval holders and delegated facilities are complying with the requirements of applicable Code of Federal Regulations (CFR) and the procedures established to meet those requirements. It also surveys the application of standardized industry practices, not required by the CFR or FAA-approved data, to identify national trends that may require development of new or revised regulations, policy, or guidance. The elements of the evaluation are referred to as criteria. Data was collected on noncompliance and applicability with respect to those criteria. The background of ACSEP, a program overview, the process for scheduling evaluations, and training evaluators are discussed in *appendix A*.

During an ACSEP evaluation, the actual operating practices of a facility are compared to the CFR, FAA-approved data, and the facility's internal procedures. Any inconsistency discovered (termed "issue" in this report) is classified and recorded. An issue is classified by its type and the system element under which it is noted. There are five issue types:

Safety Finding - an issue that compromises immediate continued operational safety.

Systemic Finding - an issue that is systemic in nature, i.e., is pervasive, repeatable, or represents a breakdown in the quality management system. For an issue to be categorized a finding, it must also be a noncompliance to a CFR or FAA-approved data (or a noncompliance with the procurement instrument when a facility is a supplier).

Systemic Observation - an issue that is systemic in nature and is a noncompliance to facility procedures that are not FAA approved.

Isolated Observation - an issue that is of an isolated or nonsystemic nature, i.e., isolated to a particular person and/or timeframe and does not represent a breakdown in the quality management system. For an issue to be categorized an isolated observation, it must also be an isolated noncompliance to a CFR or FAA-approved data (or a noncompliance with the procurement instrument when a facility is a supplier).

CFR-Based Observation - the discovery of FAA-approved data that is inconsistent with the CFR.

Issues are classified using system elements. In total, there are 17 system elements that represent a quality management system for a production approval holder:

- Organization and Responsibility
- Design Data Control
- Software Quality Assurance
- Manufacturing Processes
- Special Manufacturing Processes
- Statistical Quality Control (SQC)
- Tool and Gauge
- Testing
- Nondestructive Inspection
- Supplier Control
- Nonconforming Material
- Material Handling/Storage
- Airworthiness Determination
- FAA Reporting Requirements
- Internal Audit
- Global Production
- Manufacturing Maintenance Facility

There are 10 system elements that represent a quality management system for a delegated facility:

- Organization and Responsibility
- Design Data Approval
- Testing
- Airworthiness Certification
- Continued Airworthiness
- Project Management
- Design Change Approval
- Conformity Inspection
- FAA Notification
- Audit

Each system element is further divided into "criteria." To fully examine the detailed areas within each of the 17 system elements, the criteria were developed with extensive assistance from industry. A process also exists to identify potential new criteria should the existing criteria not address a particular functional area within a system element. The subclassification of issues into detailed criteria allows the FAA to identify specific areas of concern and allows industry to focus corrective action on those specific areas of concern. For example, the supplier control system element is composed of 16 individual criteria. Specific areas of concern that may be identified include: the use of approved suppliers, periodic evaluations of suppliers, flowdown of applicable technical and quality requirements to suppliers, raw material verification, and others.

Analysis Results and Conclusions

Of the 610 issues recorded at the 291 facilities evaluated in FY 2000, one identified a significant safety concern, i.e., a finding for which immediate corrective action was required.

There were no safety findings recorded for a PAH. There was one safety finding recorded at a delegated facility in the area of Design Data Approval (specifically criteria 3D1-Control of Type Design Data) for failure to include required safety system

information in the STC data package. The balance of the issues reported were not considered an immediate safety concern.

The system elements where the most issues were reported are as follows:

Manufacturing Processes - Specific functions and operations necessary for the fabrication and inspection of parts and assemblies (e.g., machining, riveting, and assembling).

Supplier Control - The system by which the evaluated facility ensures that supplier materials, parts, and services conform to FAA-approved design.

Design Data Control - The planning and integration of the evaluated facility's procedures for continuously maintaining the integrity of design data, as approved by the FAA or FAA-delegated representatives, in the completed product. This includes software used in type-certificated aircraft or related products (airborne software).

Tool and Gauge - The function which establishes control of precision measuring devices (e.g., tools, scales, gauges, fixtures, instruments, or automated measuring machines) used in fabrication, special processing, inspection, and testing of detail parts, assemblies, and completed products to determine conformity to FAA-approved design.

Nonconforming Material - The method of controlling, evaluating, and dispositioning of any part/product which does not conform to FAA-approved design.

Special Manufacturing Processes - The methods whereby materials, parts, or assemblies are worked or fabricated through a series of precisely controlled steps, and which undergo physical, chemical, or metallurgical transformation (e.g., heat-treating, brazing, welding, and processing of composite material).

The first five of the above six system elements have been the most predominant areas for issues since a baseline for the data was set in FY 1995. A more detailed discussion of the data is presented throughout *Section 3* of the report.

An area of special focus is chosen annually to determine if increased oversight is required. Software Quality Assurance was chosen as the special focus for this fiscal year. There were a total of six systemic findings, two systemic observations, three isolated observations, and one CFR-based observation. These were equally distributed amongst the specific criteria within this system element. No definitive conclusions can be drawn on these results at this time. It is expected that the number of issues recorded in this area will increase over time based on industry's greater reliance on software driven technologies. As more manufacturing systems develop a greater dependence on software driven systems, this area will require greater diligence in its surveillance by PAH quality assurance and audit personnel. These personnel will have to ensure that they remain well versed in the current software technologies and software system audit techniques.

The continuous improvement initiatives implemented in ACSEP have resulted in a steady increase in reported favorable experiences by evaluation teams during ACSEP evaluations over the last six years. Evaluation teams in FY 2000 reported 96 percent fewer problems in interpreting and utilizing the ACSEP order and performing evaluations than in FY 1995. In addition, there have been continuous improvements in customer satisfaction with ACSEP evaluations. As part of the ACSEP continuous improvement process, the facility's management is provided with a feedback report on which to record their assessment of the conduct of the evaluation team. All phases of an ACSEP evaluation are addressed from pre-evaluation notification through post-evaluation review of any findings and/or observations. Less than one percent of the facilities returning a feedback report in the last three years have reported dissatisfaction with the conduct of the ACSEP evaluation teams. See *Section 4* for additional information on the continuous improvement program of ACSEP.

FY 2000 Report

1. Introduction

This report summarizes the results of the Aircraft Certification Systems Evaluation Program (ACSEP) and provides a comprehensive view of the program's results from October 1999 through September 2000. The presentation of the data provides insight into procedural compliance trends with production approval holders.

1.1 Report Structure

Section 1 provides an introduction and overview of the program status.

Section 2 provides a summary of the data presented in this report.

Section 3 provides a consolidation of the data that led to the conclusions presented in *Section 2*.

Section 4 provides the results of the ACSEP improvement effort including feedback from industry, lessons learned, and comments received regarding the ACSEP evaluations.

There are two appendices: Appendix A provides a brief history and background of ACSEP and Appendix B provides definitions. Previous ACSEP Annual Reports included an appendix providing detailed data tables regarding the number and percentage of occurrence of an issue for each specific criteria. This information will now be provided on the AIR-200 web page and may also be requested from AIR-200 at (202) 267-8361. The address for the web page is http://www.faa.gov/avr/air/air200/200home.htm.

1.2 Program Overview of ACSEP

This subsection provides an overview of the ACSEP and a brief history of its growth. The ACSEP was developed as a result of numerous years of experience with Quality Assurance Systems Analysis Review (QASAR) audits and observations made during an interim audit program called "Operation SNAPSHOT."

a) ACSEP evaluations are performed in accordance with consistent and standardized evaluation criteria.

b) The evaluation criteria used during an ACSEP evaluation were developed with extensive input and cooperation from the aviation industry to ensure that emerging technologies were addressed.

c) ACSEP evaluation results are maintained in a centralized database.

d) An annual report of the aggregate ACSEP evaluation results is published.

e) ACSEP actively incorporates the evaluation of facilities with engineering delegations. The facilities that are evaluated by ACSEP are:

- Approved Production Inspection System (APIS)
- Production Certificate (PC) and Production Certificate Extension (PCEX)
- Parts Manufacturer Approval (PMA)
- Technical Standard Order (TSO) authorization
- Delegation Option Authorization (DOA)
- Designated Alteration Station (DAS)
- Special Federal Aviation Regulation No. 36 (SFAR-36)

1.3 Significant Events During the Fiscal Year

The following significant events either changed policy that affects the structure of ACSEP, are measures intended to improve PAH quality systems thereby reducing findings and observations, or are significant activities initiated as a result of ACSEP evaluation activity.

1.3.1 Removal of Category 3 Part Manufacturers from the ACSEP Evaluation Schedule

The Aircraft Certification Management Team (ACMT) chartered the Effective Resource Utilization Team (ERUT) in Fiscal Year (FY) 99 to identify work functions that utilize a high number of work hours. The ERUT was also chartered to identify strategies to modify, eliminate, or delegate these work functions in order to shift the Service's resources to higher priority work. One of the work functions identified by the ERUT was the conduct of ACSEP evaluations at non-priority PAH's. The ERUT proposed that ACSEP evaluations at non-priority PAH's be discontinued. In its place, the ERUT proposed the implementation of a structured process for PI evaluation of these PAH's. Early in FY 2000, the FAA decided to remove Category 3 Part manufacturers from the ACSEP evaluation schedule. A Category 3 Part is defined within Order 8100.7A, Appendix 2, page 5, as a part whose "failure would have no effect on continued safe flight and landing of the aircraft."

Approximately 290 production approval holder (PAH) evaluations were removed from the ACSEP evaluation schedule as a result of this policy change. This represents a 50 percent reduction in the total number of ACSEP evaluations performed each year. The Certificate Management of Category 3 Part manufacturers is now accomplished by Principal Inspector (PI) audits.

1.3.2 Initiated The Use of Revised Forms 8100-4/8100-8

To further the data analysis and presentation efforts, AIR-200 initiated the use of revised Forms 8100-4 and 8100-8. The evaluation team now chooses one of four possible survey responses, or a combination of those four responses, for each of the 228 criteria. The four choices are: Procedures in place, No procedures, Not applicable, or Unable to evaluate. The response to these survey questions will provide greater insight into the significance of recorded issues and their ranking among all issues. This information will assist the PI in focussing attention to potential problem areas that may not have been previously apparent. For example, suppose that out of 250 issues recorded against PC holders, only nine were recorded against system element 3BE4 – Software Security. A first impression would be that this is not very significant. Now suppose that of all PC holders, only 10 had procedures in place for system element 3BE4. Of those ten PC holders, nine had issues recorded against system element 3BE4. This means that 90 percent of PC holders had issues against system element 3BE4. This should alert a PI's attention to a PC holder that utilizes procedures for system element 3BE4.

The revised survey forms were not implemented until the FY 2000 evaluations had already begun. The information obtained from them will not be incorporated in this report since they were not used for the complete reporting period. They were used for all of the delegated facility evaluations and that information is presented in this report.

1.3.3 Completion of Statistical Trending Analysis

FY1999 was the final year for statistical trending analysis of ACSEP data. Previous ACSEP data showed consistent trends with little variation. Customer feedback (FAA and PAH) indicated that there was enough trending and statistical information presented in past ACSEP Annual Reports to meet their requirements. Further presentation of trending data would not be useful because it would just be repetitious of previously reported results. Therefore, data will now be presented as straight counts and compared to previously reported statistical trends. Presentation of straight counts will provide a direct path to an area that the reader may have interest in.

1.4 Overview of the ACSEP Activity

The transition from QASAR to ACSEP occurred in FY 1993. *Figure 1-1* shows the growth of the program from FY 1994 to FY 2000 (all facilities where an ACSEP evaluation was performed, including PPS facilities, are shown in the figure). The evaluation of delegated facilities began in FY 1998 after the release of Notice N8100.13, Aircraft Certification Systems Evaluation Program Criteria for Delegated Facilities.

From FY 1993 through FY 1998, the number of evaluations performed at production approval holders increased annually at an average of 24 percent. The growth of the program was facilitated by an increase in the number of qualified manufacturing, engineering, and flight test personnel fully trained to perform ACSEP evaluations. The reduction in the number of ACSEP evaluations from FY 1999 to FY 2000 is the result of the transition of Category 3 Part manufacturers from ACSEP to PI audits and the full implementation of Resource Targeting. *Table 1-1* itemizes the population of various production approval holders[1].

[1] Facilities with multiple production approvals are accounted for only once in accordance with the following order of precedence: PC (or PCEX), TSO, APIS, and PMA.

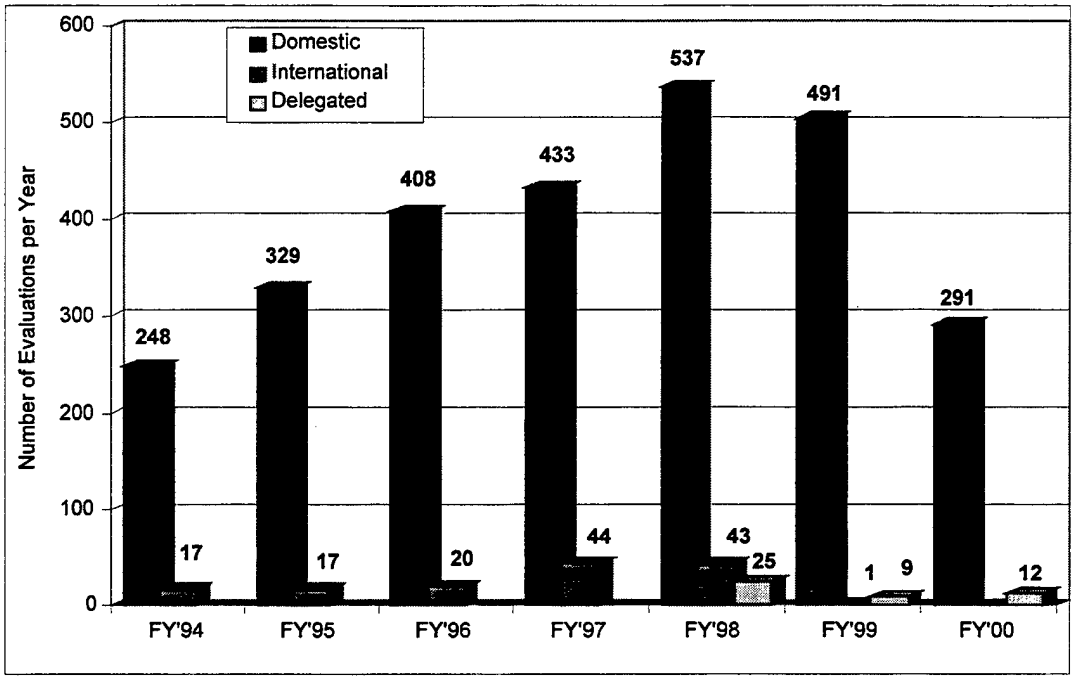

Figure 1-1.—Growth in annual ACSEP evaluations.

TABLE 1-1.—The population[2] of PAHs for fiscal years 1994 through 2000

Fiscal Year	Parts Manufacturer Approval (PMA)	Technical Standard Order (TSO) Authorization	Production [3] Certificate (PC)	Approved Production Inspection Systems (APIS)	Total number of Production Approval Holders (PAH)
1994	1,140	379	74	14	1,607
1995	1,106	309	88	5	1,508
1996	1,413	342	70	13	1,838
1997	1,437	364	98	8	1,907
1998	1,211	307	98	5	1,621
1999	1,208	306	96	5	1,615
2000	1,229	302	109	9	1,649

[2] This table is a compilation of data received from the individual directorates and is included in this report for reference only.

[3] Includes PC extensions.

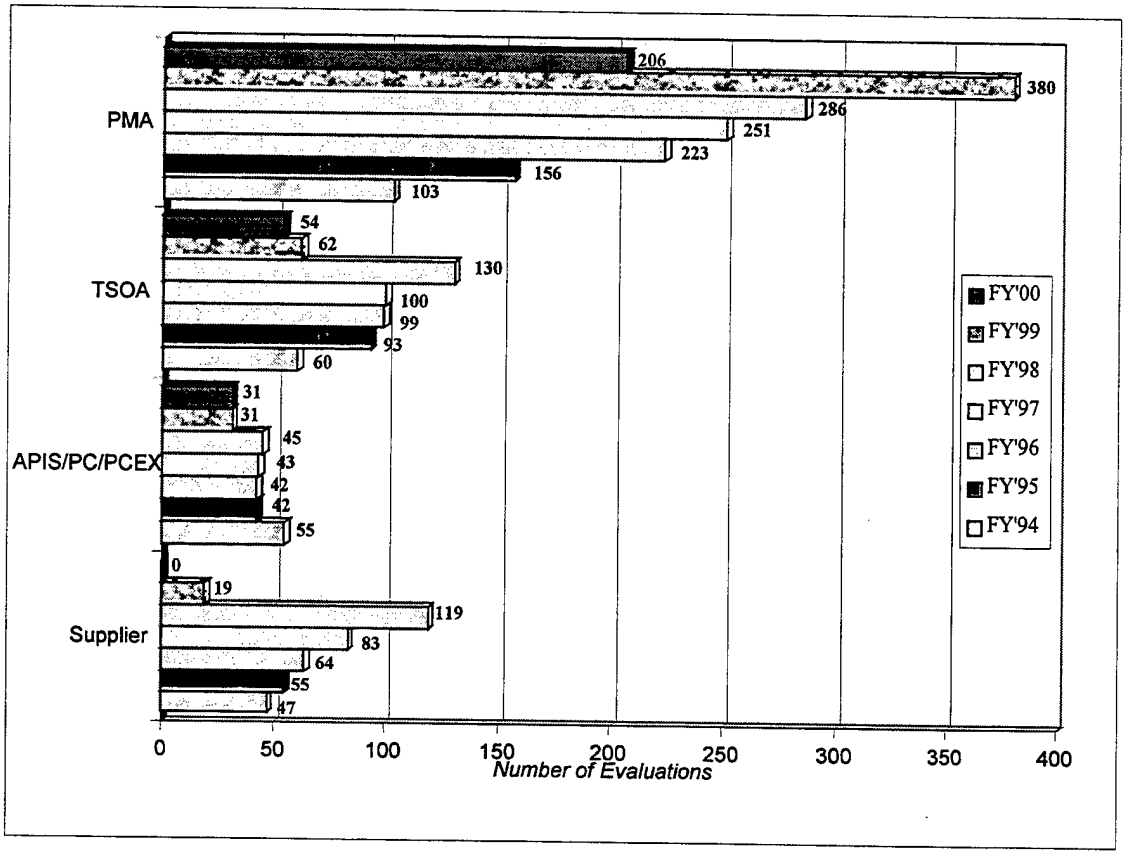

Figure 1-2.—Distribution of ACSEP evaluations at manufacturing facilities by facility type — domestic and international combined.

The distribution of ACSEP evaluations among the various facility types is presented in *Figure 1-2. Figure 1-2* shows the reduction in the number of supplier facilities evaluated in FY 1999 — the result of supplier surveillance being conducted through PI audits versus ACSEP. As presented in the FY 1999 ACSEP Annual Report, the reduction in the number of evaluations of PC holders, PC extensions, APIS, and TSO authorizations is a direct result of Resource Targeting for FY 1999. The number of evaluations of PMA holders increased to a number that was consistent with both the population of PMA facilities and current ACSEP policy. Any future increase or decrease in the number of PMA holders evaluated will reflect solely the growth or decline in the total population of PMA holders. The reduction in the number of FY2000 evaluations is a direct result of the transition of Category 3 Part manufacturers from the ACSEP process.

ACSEP evaluations were conducted by the Aircraft Certification Service's four directorates. *Figure 1-3* shows the distribution of all manufacturing evaluations among the four directorates.

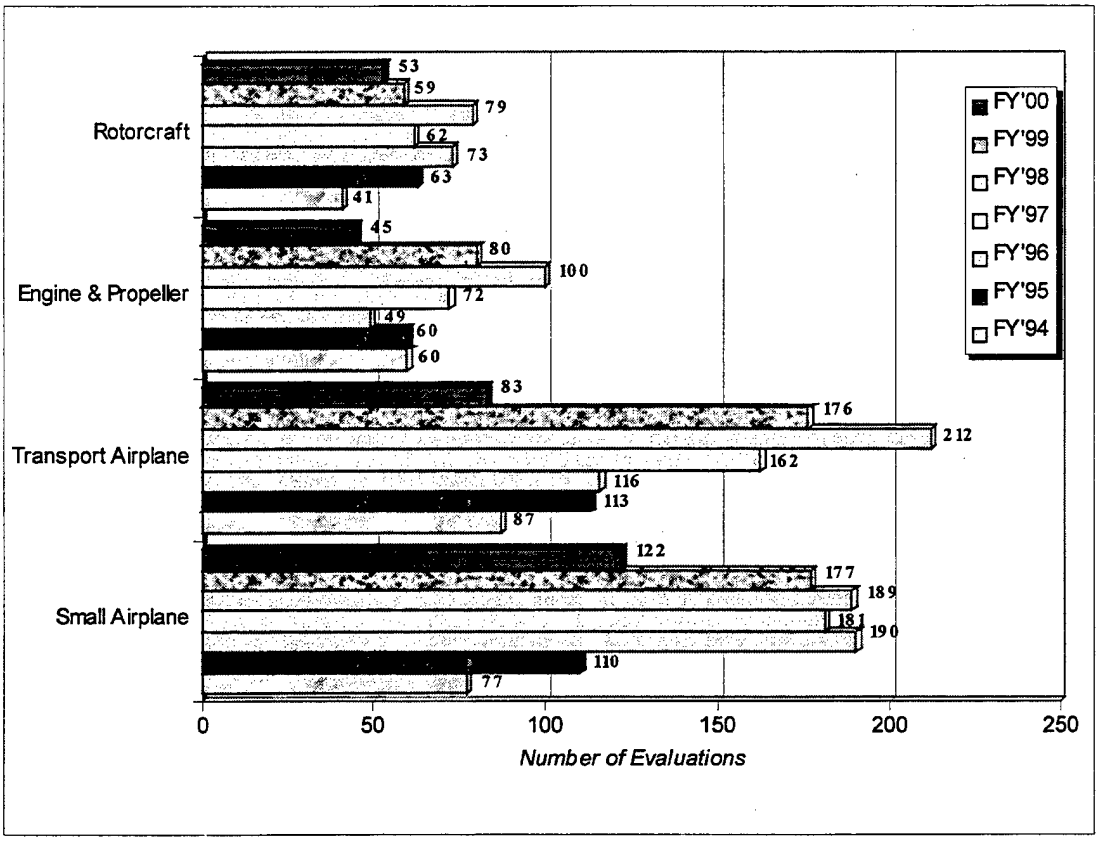

Figure 1-3.—Distribution of ACSEP evaluations at manufacturing facilities by directorate — domestic and international combined.

Table 1-2 lists the population of the various delegations. The distribution of the ACSEP evaluations among the various delegation types and among the various directorates is shown in *Figures 1-4* and *1-5* respectively.

TABLE 1-2.—The population[4] of delegated facilities for fiscal 2000

Fiscal Year	Designated Alteration Station (DAS)	Special Federal Aviation Regulation No. 36 to CFR part 121 (SFAR-36)	Delegation Option Authorization (DOA)	Total number of Delegated Facilities
1998	31	24	6	61
1999	30	22	6	58
2000	31	13	6	50

[4] This table is a compilation of data received from AIR-100 and is included in this report for reference only.

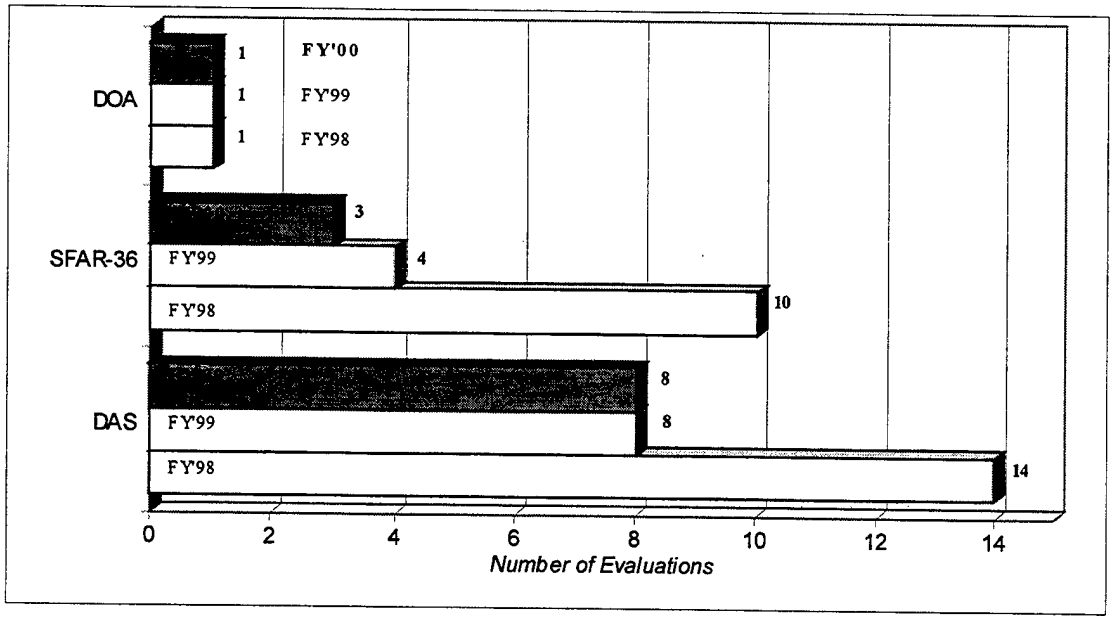

Figure 1-4.—Distribution of ACSEP evaluations at delegated facilities by delegation type.

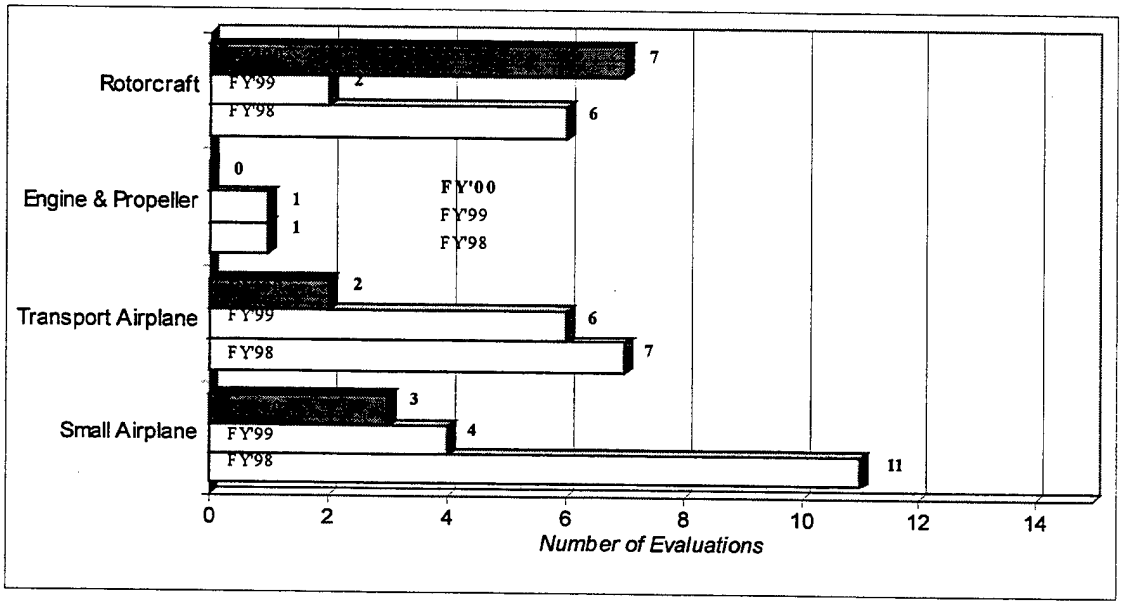

Figure 1-5.—Distribution of ACSEP evaluations at delegated facilities by directorate.

1.5 The Data Collected During an ACSEP Evaluation

The ACSEP was designed to determine if FAA production approval holders and delegated facilities are complying with the requirements of applicable CFR and the procedures established by these facilities to meet those requirements. It also surveys the application of standardized industry practices not required by the CFR to identify national

issues that may require development of new or revised regulations, policy, or guidance. The elements of the evaluation are referred to as criteria. Data is collected on noncompliance, nonconformance, and applicability with respect to those criteria.

1.5.1 The Various Types of Issues

During an ACSEP evaluation, the actual operating practices of a facility are compared to the CFR, FAA-approved data, and the facility's internal procedures. Any inconsistency discovered (termed issue in this report) is classified and recorded. An issue is classified by its type and the system element under which it is noted. There are five issue types:

Safety Finding - an issue that compromises immediate continued operational safety.

Systemic Finding - an issue that is systemic in nature, i.e., is pervasive, repeatable, or represents a breakdown in the quality management system. For an issue to be categorized a finding, it must also be a noncompliance to a CFR or FAA-approved data (or a noncompliance with the procurement instrument when a facility is a supplier).

Systemic Observation - an issue that is systemic in nature and is a noncompliance to facility procedures that are not FAA approved.

Isolated Observation - an issue that is isolated or nonsystemic in nature, i.e., isolated to a particular person and/or timeframe and does not represent a breakdown in the quality management system. For an issue to be categorized an isolated observation, it must also be an isolated noncompliance to a CFR or FAA-approved data (or a noncompliance with the procurement instrument when a facility is a supplier).

CFR-based Observation - the discovery of FAA-approved data that is inconsistent with the CFR.

In practice, a noncompliance/nonobservance of a procedure can be recorded as either a finding or a systemic observation based solely on whether the procedure was FAA approved. The number and type of procedures that are FAA-approved varies widely among the various approval types. Additionally, the CFR requirements differ among the various approval types.

1.5.2 Issues Classified into System Elements

The second form of classification of an issue is the system element under which it is discovered. In total, there are 17 system elements (listed by system element number and title) that represent a quality management system for a production approval holder:

1 Organization and Responsibility
2 Design Data Control
3 Software Quality Assurance
4 Manufacturing Processes
5 Special Manufacturing Processes
6 Statistical Quality Control (SQC)
7 Tool and Gauge
8 Testing
9 Nondestructive Inspection
10 Supplier Control
11 Nonconforming Material
12 Material Handling/Storage
13 Airworthiness Determination
14 FAA Reporting Requirements
15 Internal Audit
16 Global Production
17 Manufacturing Maintenance Facility

There are 10 system elements (listed by system element number and title) that represent a quality management system for a delegated facility:

1 Organization and Responsibility
2 Design Data Approval
3 Testing
4 Airworthiness Certification
5 Continued Airworthiness
6 Project Management
7 Design Change Approval
8 Conformity Inspection
9 FAA Notification
10 Audit

1.5.3 System Elements Classified into Criteria

Each system element is further divided into "criteria." The criteria were developed with extensive assistance from industry in order to fully represent the detailed areas within each of the system elements. A process also exists to identify potential new criteria should the existing criteria not address a particular functional area within a system element. The subclassification of issues into the detailed criteria allows the FAA to identify specific areas of concern and allows industry to focus corrective action on these specific areas of concern. For example, the supplier control system element is composed of 16 individual criteria. Specific areas of concern that may be identified include: the use of approved suppliers; periodic evaluations of suppliers; flowdown of applicable technical and quality requirements to suppliers; raw material verification; and others.

Through the use of detailed criteria and their relevant system elements, quality management systems can be evaluated in a consistent manner.

2. Conclusions based on the Data

Review of the FY 2000 ACSEP evaluation data supports the following conclusions:

- There was one safety finding recorded at a delegated facility in the area of Design Data.
- The majority of findings and observations are concentrated within a few system elements: manufacturing processes, supplier control, tool and gauge, design data control, nonconforming material, and special manufacturing processes.
- An area of special focus is chosen annually to determine if increased oversight is required. Software Quality Assurance was chosen as the special focus for this fiscal year. There were a total of six systemic findings, two systemic observations, three isolated observations, and one CFR-based observation. These were equally distributed amongst the specific criteria within this system element. No definitive conclusions can be drawn on these results at this time. It is expected that the number of issues recorded in this area will increase over time based on industry's greater reliance on software driven technologies. As more manufacturing systems develop a greater dependence on software driven systems, this area will require greater diligence in its surveillance by quality assurance and audit personnel. These personnel will have to ensure that they remain well versed in the current software technologies and software system audit techniques.

3. Data Analysis — Manufacturing Facilities

3.1 Safety Related Findings

Of the 611 findings and observations recorded at production approval holder facilities in FY 2000, none identified immediate safety concerns. During an ACSEP at a Designated Alteration Station (DAS), one Safety Finding was recorded in the area of Design Data Approval (specifically criteria 3D1-Control of Type Design Data) for failure to include required safety system information in the STC data package.

3.2 Systemic Findings

There were 294 systemic findings reported in FY 2000. At least one systemic finding was recorded at 33 percent of the production approval holders evaluated in FY 2000. Of all of the systemic issues recorded, 79 percent were recorded within only six of the system elements. These six system elements are displayed in *Figure 3-1.*

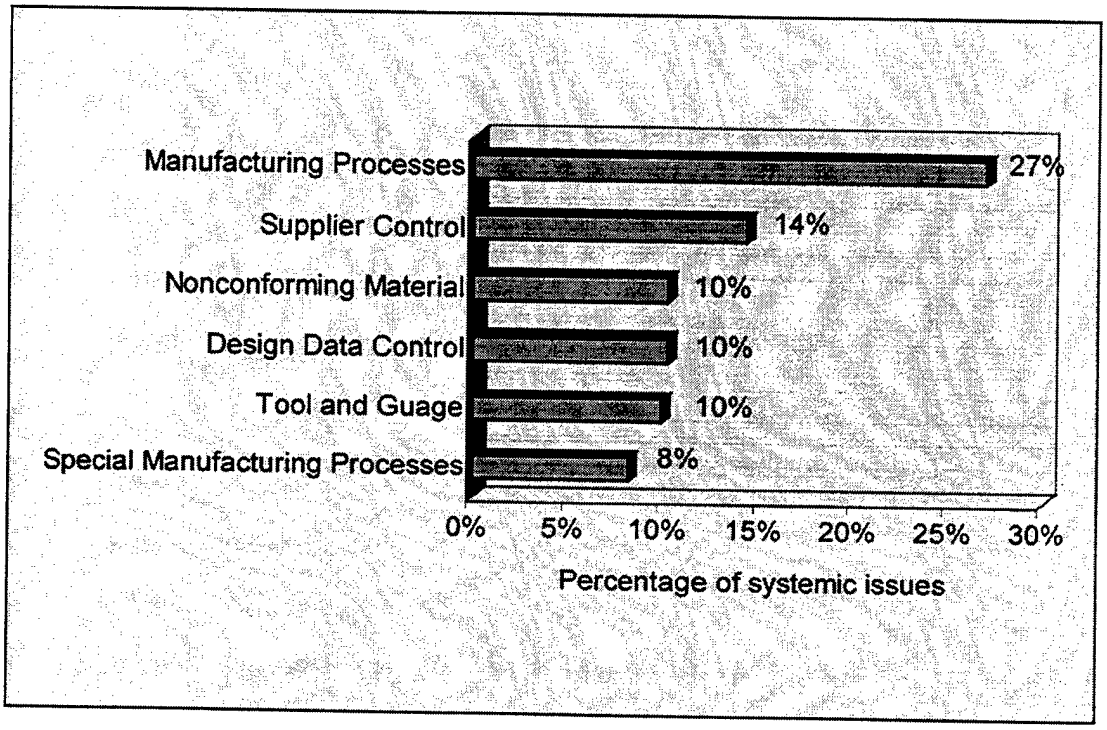

Figure 3-1.— Systemic findings – all facility types.

3.3 Systemic Observations

There were 147 systemic observations reported in FY 2000. At least one systemic observation was recorded at 9 percent of the production approval holders evaluated in FY 2000. Of all of the systemic observations recorded, 83 percent were recorded within only six of the system elements. These six system elements are displayed in *Figure 3-2.*

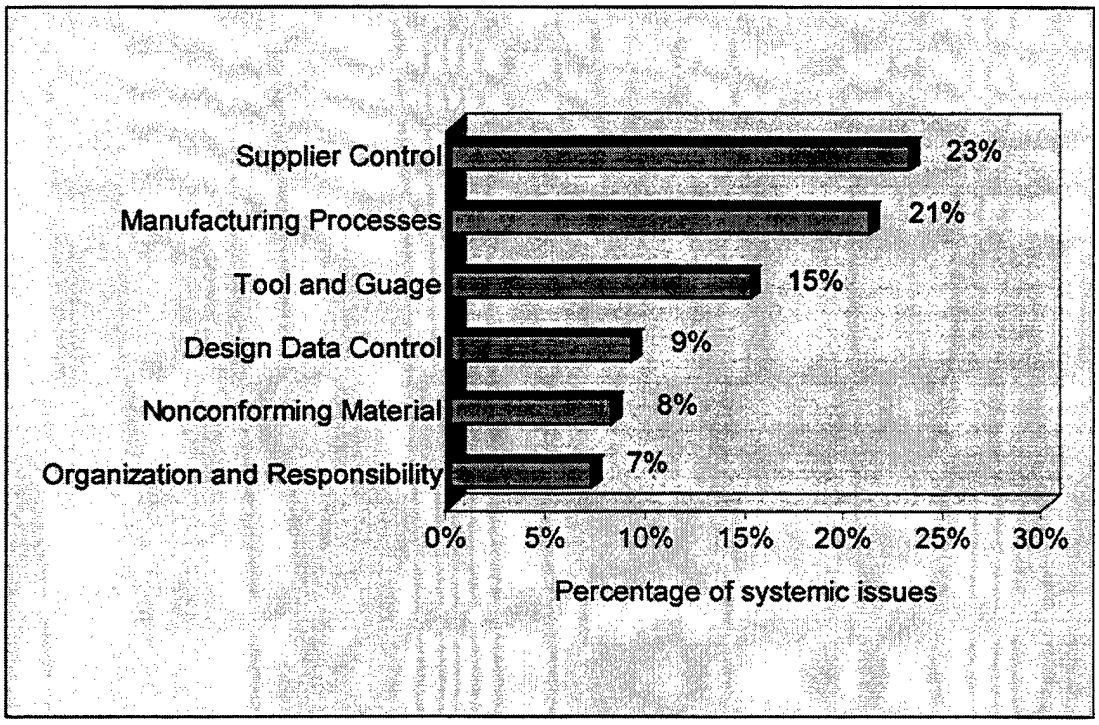

Figure 3-2.— Systemic observations – all facility types.

3.4 Isolated Observations

There were 128 isolated observations reported in FY 2000. At least one isolated observation was recorded at 7 percent of the production approval holders evaluated in FY 2000. Of all of the isolated observations recorded, 84 percent were recorded within only six of the system elements. These six system elements are displayed in *Figure 3-3.*

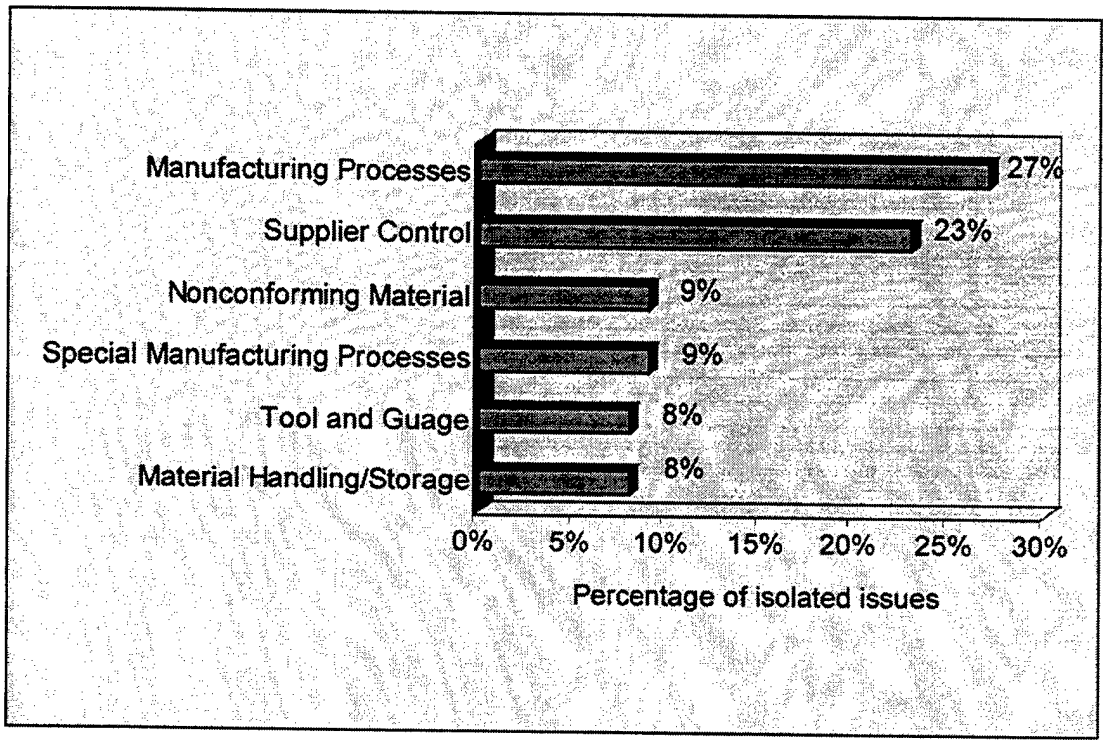

Figure 3-3.— Isolated observations – all facility types.

3.5 CFR-Based Observations

There were 43 CFR-based observations reported in FY 2000. *Table 3-1* lists those system elements where the CFR-based observations were reported. There were 19 CFR-based observations, with Manufacturing Processes having the greatest number of issues, reported in FY 1999.

TABLE 3-1.—CFR-based observations

Domestic	Number of CFR-based observations reported
Design Data Control	14
Manufacturing Processes	6
Supplier Control	6
Organization & Responsibility	5
Testing	3
Statistical Quality Control (SQC)	3
Software Quality Assurance	2
Special Manufacturing Processes	1
Nonconforming Material	1
Airworthiness Determination	1
FAA Reporting Requirements	1

3.6 System Element Issues

3.6.1 Similarity Among Approval Types

Tables 3-2 through *3-4* show the most prevalent issues, as defined by the total number of systemic findings and observations combined, for each of the approval types. There were no issues recorded for the two APIS ACSEPs performed this year. *Table 3-5* shows the most prevalent issues for all of the approval types combined. It is apparent from this presentation that the distribution of issues for all of the approval types combined is similar to that for any individual approval type alone. *Table 3-6* summarizes the data contained in the figures by comparing the most prevalent issues among the various facility types.

Please note that direct comparison of the approval types cannot be done with these charts. As revealed in the FY1999 Annual ACSEP Report, the proportion of facilities with systemic issues is strongly related to system complexity. Because there are significant differences in system complexity among the various approval types, these charts cannot be used to compare compliance between approval types.

TABLE 3-2.—Counts of PMA issues.

System Element	Systemic Findings	Systemic Observations	Isolated Observations	CFR-Based Observations
Organization and Responsibility	2	9	6	2
Design Data Control	13	11	2	11
Software Quality Assurance	0	2	1	0
Manufacturing Processes	33	30	15	4
Special Manufacturing Processes	10	3	6	1
Statistical Quality Control	0	0	0	1
Tool & Gauge	3	21	8	0
Testing	1	1	1	0
Nondestructive Inspection	0	2	1	0
Supplier Control	17	33	4	1
Nonconforming Material	10	10	4	1
Material Handling/Storage	3	6	2	0
Airworthiness Determination	0	1	0	1
FAA Reporting Requirements	0	1	1	1
Internal Audit	1	6	0	0
Global Production	0	0	1	0
Manufacturer's Maintenance Facility	0	0	0	0
TOTAL	93	136	52	23

TABLE 3-3.—Counts of PC issues.

System Element	Systemic Findings	Systemic Observations	Isolated Observations	CFR-Based Observations
Organization and Responsibility	4	1	0	1
Design Data Control	10	0	3	0
Software Quality Assurance	3	0	2	1
Manufacturing Processes	29	0	18	0
Special Manufacturing Processes	11	1	5	0
Statistical Quality Control	1	0	2	0
Tool & Gauge	20	0	4	0
Testing	4	1	2	1
Nondestructive Inspection	5	0	2	0
Supplier Control	9	0	5	0
Nonconforming Material	10	1	7	0
Material Handling/Storage	2	0	7	0
Airworthiness Determination	1	0	0	0
FAA Reporting Requirements	1	0	0	0
Internal Audit	4	0	2	0
Global Production	0	0	0	0
Manufacturer's Maintenance Facility	1	0	0	0
TOTAL	115	4	59	3

TABLE 3-4.—Counts of TSOA issues.

System Element	Systemic Findings	Systemic Observations	Isolated Observations	CFR-Based Observations
Organization and Responsibility	2	0	1	2
Design Data Control	7	2	2	3
Software Quality Assurance	3	0	0	0
Manufacturing Processes	17	1	2	2
Special Manufacturing Processes	3	0	0	0
Statistical Quality Control	2	0	0	2
Tool & Gauge	6	1	7	0
Testing	2	0	1	2
Nondestructive Inspection	3	0	0	0
Supplier Control	16	1	1	5
Nonconforming Material	10	1	0	0
Material Handling/Storage	4	0	1	0
Airworthiness Determination	0	0	0	0
FAA Reporting Requirements	3	0	1	0
Internal Audit	6	1	0	0
Global Production	0	0	0	0
Manufacturer's Maintenance Facility	2	0	1	0
TOTAL	86	7	17	16

TABLE 3-5.—Counts of all issues.

System Element	Systemic Findings	Systemic Observations	Isolated Observations	CFR-Based Observations
Organization and Responsibility	8	10	7	5
Design Data Control	30	13	7	14
Software Quality Assurance	6	2	3	1
Manufacturing Processes	78	31	35	6
Special Manufacturing Processes	24	4	11	1
Statistical Quality Control	3	0	2	3
Tool & Gauge	29	22	19	0
Testing	7	2	4	3
Nondestructive Inspection	8	2	3	0
Supplier Control	42	34	10	6
Nonconforming Material	30	12	11	1
Material Handling/Storage	9	6	10	0
Airworthiness Determination	1	1	0	1
FAA Reporting Requirements	4	1	2	1
Internal Audit	11	7	2	0
Global Production	0	0	1	0
Manufacturer's Maintenance Facility	3	0	1	0
TOTAL	294	147	128	42

TABLE 3-6.—Summary of the most prevalent systemic issues - FY 2000

System Element	ALL	PC	PMA	TSOA
Manufacturing Processes	✗	✗	✗	✗
Supplier Control	✗	✗	✗	✗
Design Data Control	✗	✗	✗	✗
Tool & Gauge	✗	✗	✗	✗ *
Nonconforming Material	✗	✗	✗	✗
Special Manufacturing Processes	✗	✗	✗	
Internal Audit				✗ *

Leading issues for industry

✗ = One of the top six systemic issues

* = Tied

A five-year comparison of the most frequently cited system elements with systemic issues (*see Table 3-7*) indicates that there have been only minor variations in the order of occurrence at the system element level. The various approval holders appear to have similar key issues. With the exception of some minor shifting in position, the top issues have remained the top issues over the five years.

TABLE 3-7.—Most frequently cited system elements with systemic issues – FY 1996 through FY 2000

	Annual System Element Rank				
	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
ALL APPROVAL TYPES					
Manufacturing Process	1	1	1	1	1
Supplier Control	2	2	2	2	2
Tool and Gauge	3	3	3	4	3
Design Data Control	4	4	3	3	4
Nonconforming Material	5	6	5	5	5
Material Handling/Storage	6	4	5	6	7
PC					
Manufacturing Process	2	1	1	1	1
Tool and Gauge	1	3	8	5	2
Special Manufacturing Processes	4	4	3	3	3
Design Data Control	5	6	3	6	4
Nonconforming Material	8	6	3	3	5
Supplier Control	3	2	3	2	6
Material Handling/Storage	8	4	2	8	12
PMA					
Manufacturing Process	2	1	1	1	1
Supplier Control	1	2	2	2	2
Tool and Gauge	4	3	3	4	3
Design Data Control	4	5	3	3	4
Nonconforming Material	3	4	5	5	5
TSO					
Manufacturing Process	1	1	1	2	1
Supplier Control	2	2	2	1	2
Nonconforming Material	6	5	4	5	3
Design Data Control	3	4	4	4	4
Tool and Gauge	4	3	4	3	5
Material Handling and Storage	5	8	3	5	7

3.7 Analysis of Evaluation Criteria

The following subsections contain lists of the most significant criteria issues at any given facility type. This data can be used by industry to focus corrective action and by the FAA for resource allocation initiatives. The data is presented in three forms: a view of industry as a whole listed by type of issue — systemic or isolated; a focus on individual approval types in which systemic issues are separated by approval type; and a summary of comparisons among the approval types. For clarity, only the top issues are reported in these subsections.

3.7.1 A View of Industry

This subsection lists the most prevalent criteria issues within the industry as a whole. The data from all of the ACSEP evaluations performed in FY 2000 are first presented pooled together (*Table 3-8*). The table column titled "Percent of All Facilities" presents the proportion of facilities evaluated that had issues recorded.

3.7.1.1 Systemic findings and observations

The 11 evaluation criteria most frequently recorded with systemic issues are presented in *Table 3-8.* These 11 criteria accounted for almost 39 percent of all reported systemic issues. As a group, they occurred at 52 percent of the facilities with recorded issues.

TABLE 3-8.—Ten most reported criteria with systemic issues

Rank	Criteria	Description	Number of Systemic Issues	Percent of Systemic Issues	Percent of All Facilities
1	10Q1	Initial & periodic evaluations of suppliers	23	5%	15%
2	5Q3	Performing special processes in accordance with process specifications	20	5%	13%
3	4Q1	Inspection methods and plans	18	4%	12%
4	11Q1	Control of nonconforming products	16	4%	10%
5	4P9	Completed product/part identification	15	3%	10%
6	10Q10	Receiving inspection	15	3%	10%
7	15M1	Internal auditing program	14	3%	10%
8	4Q5	Inspection records	14	3%	10%
9	2E7	Design/Technical data document control	13	3%	10%
10	7Q1	Approval/inspection of tools and gauges	12	3%	8%
11	11Q2	Permanent identification of scrap material	11	2%	8%

Table 3-9 illustrates that many of the most significant systemic issues have been significant for the last five years. The table lists the top ten most cited criteria for the last five years. The columns: FY 2000, FY 1999, FY 1998, FY 1997, and FY 1996 indicate whether the criteria was a top issue for that year. Six of the ten have been the top issues for four or more of the last five years. Note that the criteria are not presented according to ranking. They are in random order.

TABLE 3-9.—Five-year comparison of most predominant systemic issues – by criteria.

Criteria		FY 2000	FY 1999	FY 1998	FY 1997	FY 1996
10Q1	Initial & periodic evaluations of suppliers	X	X	X	X	X
4P9	Completed product/part identification	X	X	X	X	X
15M1	Internal auditing program	X	X	X	X	X
11Q1	Control of nonconforming products	X	X	X	X	X
5Q3	Accord with process specifications		X	X	X	X
4P4	Work instructions control manufacturing processes		X	X	X	
10Q10	Receiving inspection	X	X		X	X
10Q5	Flow down of technical & quality requirements			X	X	
10Q8	Verification of raw material		X			X
4Q5	Inspection records	X	X	X	X	

X = Criteria within the top tenth percentile for the fiscal year

"blank" = Criteria within the lower 90th percentile for the fiscal year

3.7.2 A Facility Focus

This section lists the criteria issues separated by approval type (*Tables 3-10 to 3-12*). This allows the reader to focus on the issues pertinent to a particular approval type without bias from the other approval types. For example, the data from the relatively few PC holders is not skewed by the data from the much larger population of PMA holders.

For clarity, only the top issues are reported in this section.

TABLE 3-10.—Predominant systemic issues — PC holders

Rank	Criteria	Description	Number of Systemic Issues	Percent of Systemic Issues for PC Holders	Percent of PC Holders with Issues
1	5Q3	Accord with process specifications	9	5%	29%
2	2E7	Design/Technical data document control	5	3%	17%
3	7Q1	Approval/inspection of tools and gauges	5	3%	17%
4	11Q1	Control of nonconforming products	4	2%	13%
5	10Q1	Initial & periodic evaluations of suppliers	3	2%	10%
5	4Q1	Inspection methods and plans	3	2%	10%
5	10Q10	Receiving inspection	3	2%	10%
5	15M1	Internal audit	3	2%	10%
5	4Q3	Issuance of inspection stamps	3	2%	10%
5	7Q12	Calibration Records	3	2%	10%

TABLE 3-11.—Predominant systemic issues — PMA holders

Rank	Criteria	Description	Number of Systemic Issues	Percent of Total Systemic Issues for PMA Holders	Percent of PMA Holders
1	4P9	Completed product/part identification	15	5%	16%
1	10Q1	Initial & periodic evaluations of suppliers	15	5%	16%
3	4Q1	Inspection methods and plans	12	4%	13%
4	11Q1	Control of nonconforming products	9	3%	10%
4	5Q3	Accord with process specifications	9	3%	10%
5	2E7	Design/Technical data document control	8	3%	9%
7	10Q8	Verification of raw material	8	3%	9%

TABLE 3-12.—Predominant systemic issues — TSO authorization holders

Rank	Criteria	Description	Number of Systemic Issues	Percent of Total Systemic Issues for TSO Authorizations	Percent of TSO Authorizations
1	10Q10	Receiving inspection	6	5%	17%
2	10Q1	Initial & periodic evaluations of suppliers	5	4%	14%
3	4P4	Work instructions control manufacturing processes	4	3%	11%
3	15M1	Internal auditing program	4	3%	11%
4	4Q1	Inspection methods and plans	3	2%	9%
4	10Q2	Use of approved suppliers	3	2%	9%
4	4Q1	Inspection methods and plans	3	2%	9%
4	11Q1	Control of nonconforming products	3	2%	9%

3.8 Software Quality Assurance

Software Quality Assurance was chosen as the selected analysis for this fiscal year. There were a total of 12 issue recorded within the Software Quality Assurance element for this fiscal year. This accounted for 2 percent of the total issues recorded. The issues were evenly distributed amongst the various approval types. There were a total of six systemic findings, two systemic observations, three isolated observations, and one CFR-based observation. These were equally distributed amongst the specific criteria within this system element. No definitive conclusions can be drawn on these results at this time. It is expected that the number of issues recorded in this area will increase over time based on industry's greater reliance on software driven technologies. As more manufacturing systems develop a greater dependence on software driven systems, this area will require greater diligence in its surveillance by quality assurance and audit personnel. These personnel will have to ensure that they remain well versed in the current software technologies and software system audit techniques. This subject will be addressed again in the ACSEP FY 2001 Annual Report.

3.9 Delegated Facilities

This was the third year that data was collected for facilities with engineering delegation authority. Delegated facilities include Designated Alteration Stations (DAS), Special Federal Aviation Regulation No.36 (SFAR-36) facilities, and Delegation Option Authorization (DOA) facilities. For this fiscal year, 17 systemic findings (including one safety finding), 5 isolated observations, and 3 FAR-based observations were recorded. A summary of the data follows.

3.9.1 Designated Alteration Stations (DAS) Facilities

Table 3-13 presents the breakdown of systemic issues recorded for DAS facilities. ACSEP evaluations were performed at 8 DAS facilities. There were a total of 15 systemic issues recorded. The two most prevalent issues were in the areas of Conformity Inspection and Design Data Approval. One Safety Finding was recorded in the area of Design Data Approval (specifically criteria 3D1-Control of Type Design Data) for failure to include required safety system information in the STC data package. *Table 3-14* presents the breakdown of isolated issues recorded for DAS facilities. Three FAR-based issues were recorded. Two were in the area of Airworthiness Certification and one was in the area of FAA Notification.

Table 3-13.—DAS systemic issues.

Rank	Criteria	Systemic Issues	Percent of all systemic DAS issues	Cumulative percent of all systemic DAS issues	Percent of all DAS facilities that had systemic issues	Percent of DAS facilities where the criteria was applicable	Percent of DAS facilities where the criteria was applicable and had systemic issues
1	6D4	2	13%	13%	25%	50%	50%
2	6D2	2	13%	27%	25%	75%	33%
3	3D1	2	13%	40%	25%	100%	25%
4	10D1	1	7%	47%	13%	50%	25%
5	6D9	1	7%	53%	13%	75%	17%
5	6D6	1	7%	60%	13%	75%	17%
6	5D3	1	7%	67%	13%	88%	14%
6	5D1	1	7%	73%	13%	88%	14%
7	4D2	1	7%	80%	13%	63%	20%
8	2D6	1	7%	87%	13%	75%	17%
9	1D2	1	7%	93%	13%	100%	13%
10	7D1	1	7%	100%	13%	63%	20%

Table 3-14.—DAS isolated issues.

Rank	Criteria	Isolated Issues	Percent of all isolated DAS issues	Cumulative percent of all isolated DAS issues	Percent of all DAS facilities that had isolated issues	Percent of DAS facilities where the criteria was applicable	Percent of DAS facilities where the criteria was applicable and had isolated issues
1	3D1	1	20%	20%	13%	100%	13%
2	7D1	1	20%	40%	13%	63%	20%
3	1D2	1	20%	60%	13%	100%	13%
3	1D12	1	20%	80%	13%	100%	13%
3	8D2	1	20%	100%	13%	100%	13%

3.9.2 Special Federal Aviation Regulation No. 36 (SFAR-36) Facilities

ACSEP evaluations were performed at 3 SFAR-36 facilities. There were no issues recorded.

3.9.3 Delegation Option Authorization (DOA) Facilities

There was one ACSEP conducted at a DOA facility. Two systemic issues and no isolated issues were recorded. One Systemic Finding was recorded in the area of Design Data Approval (specifically criteria 3D1-Control of Type Design Data) and one Systemic Finding was recorded in the area of Design Change Approval (specifically criteria 4D1-Control of Changes To Type Design Data).

3.9.4 A Comparison For the Last Three Years

There were 37 systemic findings recorded in FY 1998, 19 systemic findings recorded in FY 1999, and 17 systemic findings recorded in FY 2000 at delegated facilities. The distribution of findings amongst the three types of facilities for each year was similar. The distribution of systemic findings within the specific system elements was also similar. A presentation of the actual ranking of the systemic issues within the system elements for the last three years would be ambiguous because of the small number of findings recorded and because specific 8100-8 survey data was not recorded until this year.

4. Improvement Emphasis

The goal of the ACSEP is to support continuing operational safety and promote continuous improvement.

4.1 Industry Feedback

As part of the ACSEP Quality Improvement Program, a performance feedback report (FAA Form 8100-7, FAA ACSEP Evaluation Feedback Report) is provided to each individual organization when notified that an evaluation is scheduled to take place. Each facility evaluated is requested to use this report to critique the FAA ACSEP evaluation process. The feedback report is used to record the facility's impression for each step of the evaluation, from notification to the post-evaluation conference. A question concerning the professionalism of the ACSEP evaluation team is also included on the report. The facility's management is encouraged to complete the report and return it for analysis. Feedback reports were returned by 44 percent of the facilities.

Overall, the feedback was very good. As with the previous year, greater than 99 percent of the responses were "Satisfactory" or better (see *Figure 4-1*). *Figure 4-2* gives the average scores for each of the feedback categories measured and an overall average. The data presented remains consistent from the previous years.

The feedback report also allows for the inclusion of comments/suggestions. The comments/suggestions dealt primarily with the issues of scheduling, providing materials to the facility prior to the ACSEP team's arrival, more PI involvement. Examples of comments/suggestions submitted include:

- Would like more advanced notice of the audit.
- Would like a PI visit before the audit.
- Would like more PI visits.
- Provide the in-brief slides prior to the team's arrival.
- Provide a preliminary copy of FAA Form 8100-4, ACSEP Survey Sheet for Production Approval Holders to the facility evaluated.
- Auditors required better training.

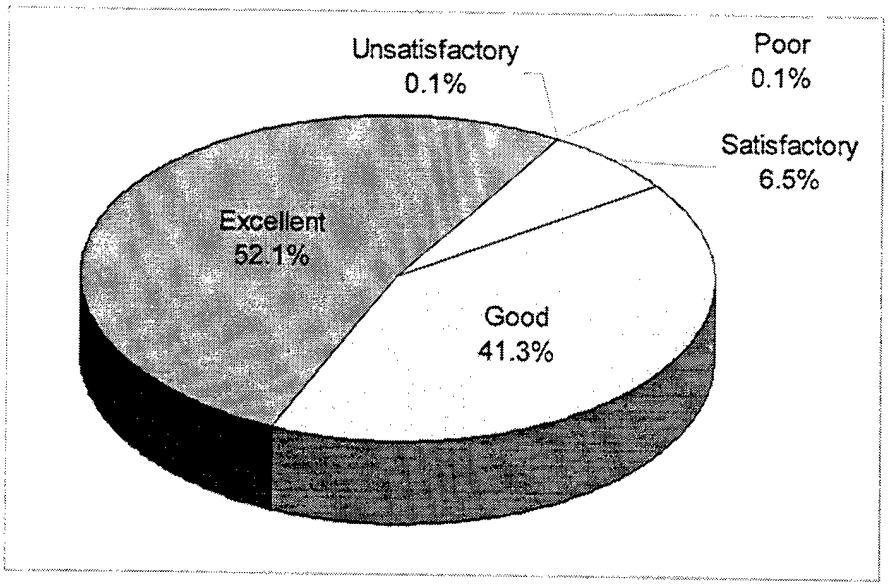

Figure 4-1.—Distribution of industry feedback.

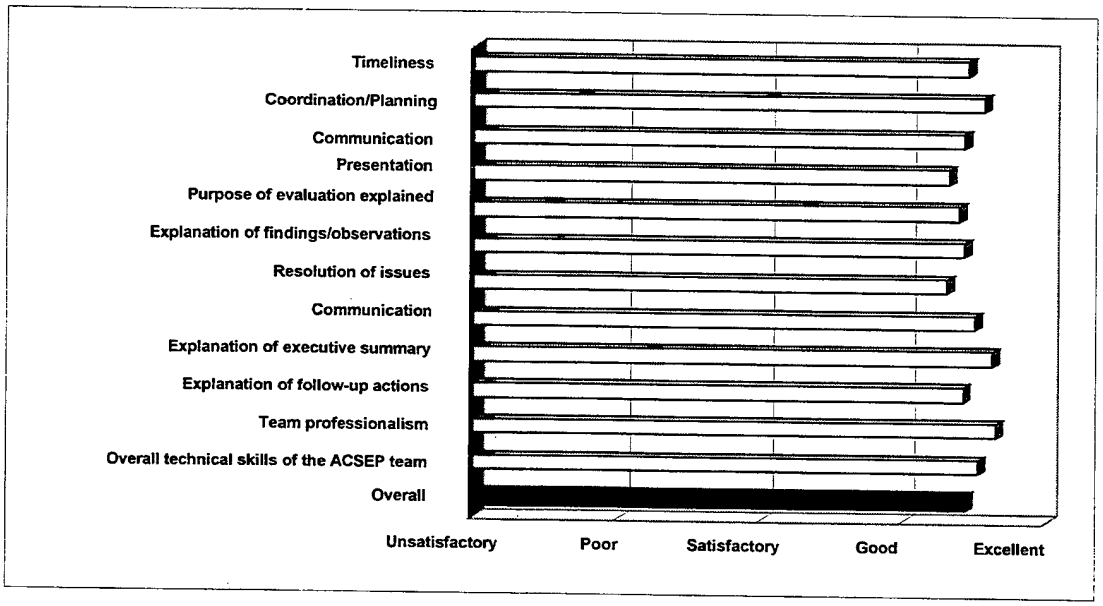

Figure 4-2.—ACSEP as graded by industry.

4.2 Lessons Learned

An additional part of the continuous improvement process is the gathering and analyzing of lessons learned that the evaluation team documented at the conclusion of each ACSEP evaluation. Each ACSEP evaluation team submits a "lessons learned" form that records the team's general assessment of the evaluation, difficulties with the order, system elements not evaluated, and any proposed new criteria. *Figure 4-3 through figure 4-6* show the trend in these lessons learned from FY 1995 to FY 2000.

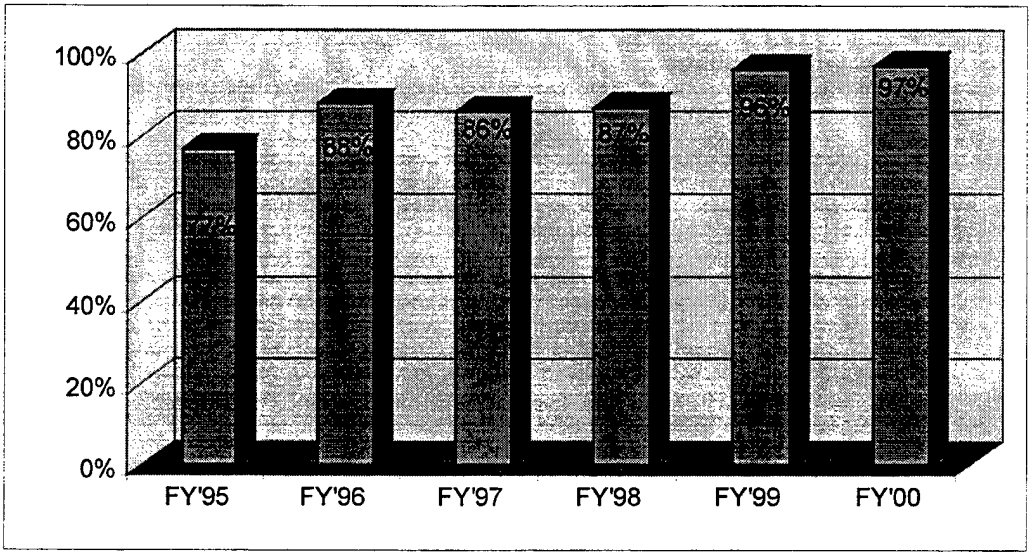

Figure 4-3.—Trend of lessons learned—favorable experiences.

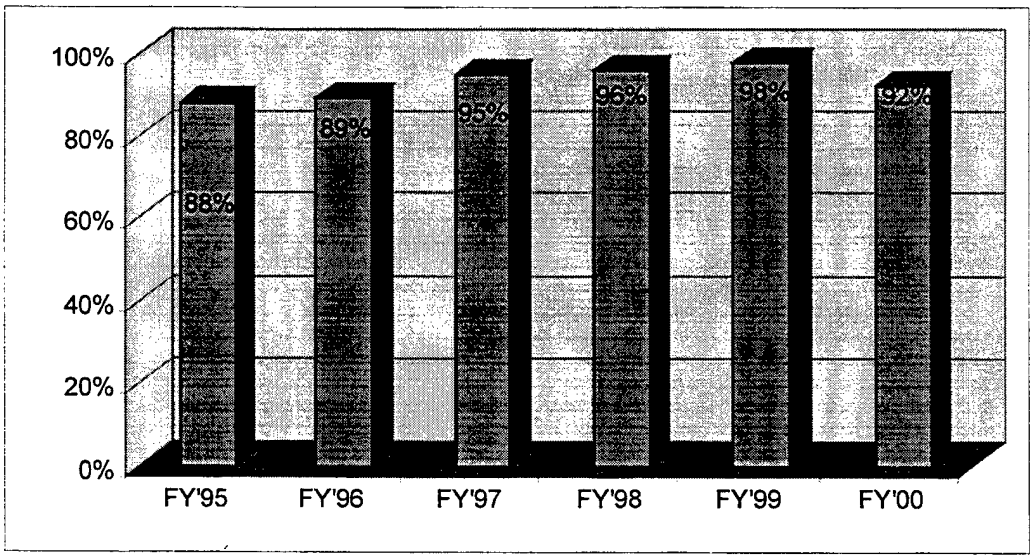

Figure 4-4.—Trend of lessons learned—no difficulties with Order 8100.7

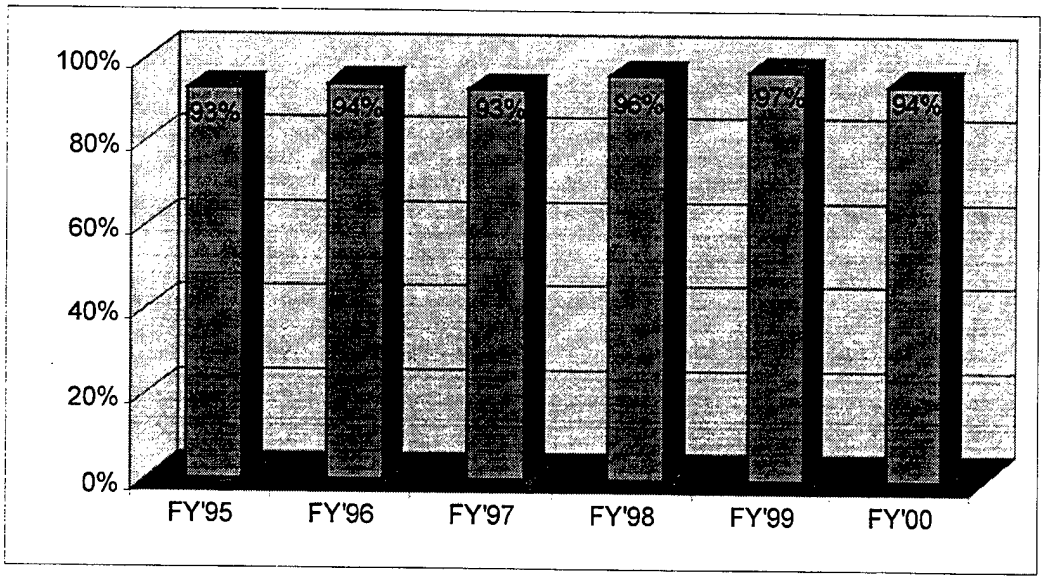

Figure 4-5.—Trend of lessons learned—evaluation completed.

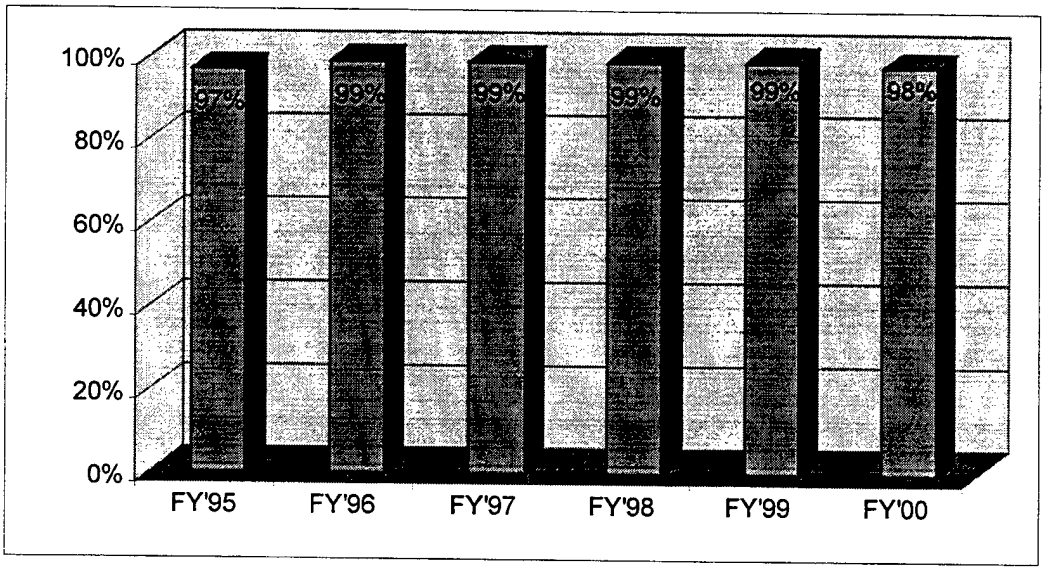

Figure 4-6.—Trend of lessons learned—no new criteria needed.

The percentage of teams reporting favorable experiences was consistent from last year. There was an increase in the percentage of teams having difficulties using the order. This is directly attributable to the introduction of the new 8100-4 survey form and placing the Form 8100-6 in Order 8120.2B. The percentage of teams having difficulties using the order is expected to decrease as teams develop greater familiarity with the new Form 8100-4. There was a slight decrease in the percentage of evaluations completed. This was primarily due to time constraints related to scheduling and weather issues. As

in previous years, the evaluation teams did not, as a whole, require the need for new criteria.

Figure 4-7 presents the number of ACSEPs with system elements not completed. The total number of system elements not evaluated significantly decreased from the previous year. This is consistent with the total reduction in the number of ACSEPs performed this year. Internal Audit dropped from second to ninth in ranking for system elements not evaluated. This implies that teams have recognized the importance of evaluating this element and are ensuring that it is adequately addressed during the evaluation.

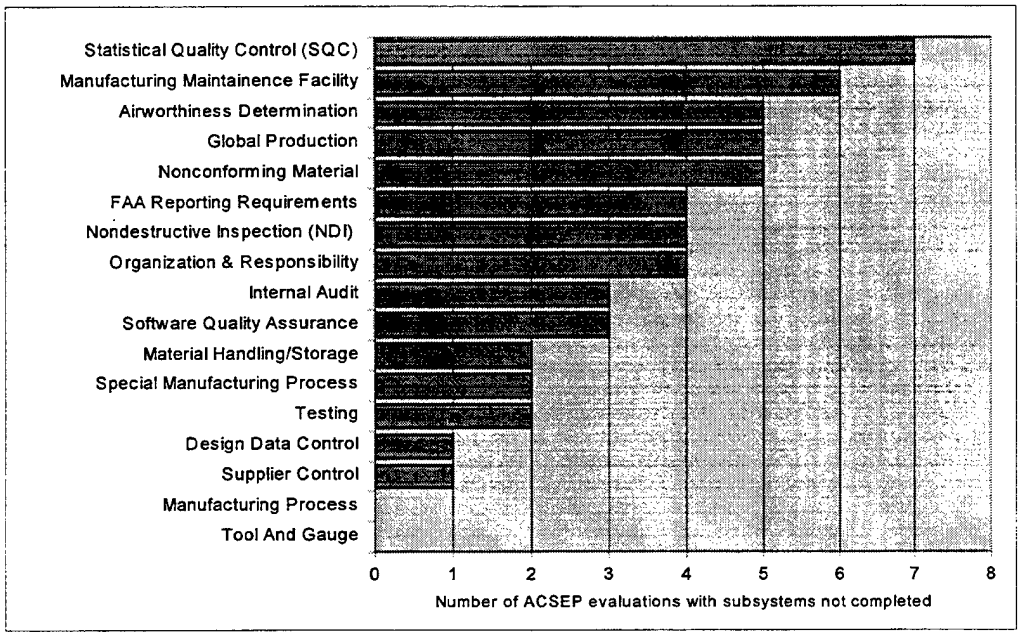

Figure 4-7.— Distribution of subsystems not evaluated.

Table 4-1 presents a detailed breakdown of comments received with the Lessons Learned. There was an increase in the response to "Time scheduled at facility was too short or too long." Two significant comments were received for this reporting period. The first is that there were a marked number of complaints that the instructions for completing the Form 8100-6 are not included in Order 8100.7A. The instructions are currently in Order 8120.2 in response to a Certificate Management Team (CMT) recommendation. This requires the team to carry an additional piece of documentation with them to the audits. The second significant comment was from teams noting that they felt the survey Form 8100-4 was not clear and unnecessary. These comments were also reflected in their response to "difficulties using the order." As stated previously, teams will become more comfortable with this form as they use it. The comment that they feel it is not necessary can be attributed to the teams lack of understanding for the purpose of the information requested on the form. The information is not being used to assist in the specific ACSEP

of the facility, rather it is being collected to assist in the national survey of all PAHs subject to an ACSEP for the given reporting period.

TABLE 4-1.—Comments received from lessons learned sheets

General Issues/Comments	FY'96	FY'97	FY'98	FY'99	FY'00
Time scheduled at facility was too short or to long	6%	5%	5%	3%	7%
Computer or ACSEP software issues	0%	0%	3%	1%	2%
Logistics; no escorts or QC mgr., facility not notified	0%	2%	1%	0%	1%
QC Manual: incomplete, outdated, conflicts with other procedures	1%	1%	0%	0%	1%
Production is very low, inactive, or inappropriate for audit	2%	1%	0%	1%	2%
Management defensive/uncooperative	n/a	1%	0%	1%	0%
ISO 9000 certification better prepared the facilities for ACSEP evaluation	1%	1%	0%	1%	1%
Recommend extending evaluation frequency	1%	1%	0%	1%	0%
Misc. other issues	2%	2%	3%	1%	1%
Difficulty with Order	**FY'96**	**FY'97**	**FY'98**	**FY'99**	**FY'00**
Criteria; add, incorrect, or system element issues	5%	4%	2%	2%	2%
ACSEP too big for facility	2%	0%	1%	1%	1%
Observations & findings; confusion with definitions	1%	0%	0%	1%	1%
Confusion about recording multiple occurrences of findings or observations	1%	1%	0%	1%	0%
Instructions for Form 8100-6 not in Order 8100.7A	n/a	n/a	n/a	n/a	4%
Form 8100-4 not clear/not necessary	n/a	n/a	n/a	n/a	4%

APPENDIX A. HISTORY AND BACKGROUND OF ACSEP

A1. Background

The ACSEP was developed as a result of numerous years of experience with Quality Assurance Systems Analysis Review (QASAR) audits and observations made during an interim audit program called "Operation SNAPSHOT." Maintaining consistency with new FAA policies and regulations, with regard to the certificate management process, was also a consideration for the establishment of ACSEP. The intent was to establish a surveillance system that would meet the needs and requirements of the FAA and industry, while incorporating standardized evaluation practices and techniques consistent with the aircraft manufacturing environment and internationally recognized guidelines. The evaluation criteria were, in part, developed in conjunction with the Aerospace Industries Association and General Aviation Manufacturer's Association. By design, ACSEP will support continued operational safety in an ever changing aircraft manufacturing environment (e.g., new technologies, automation, and co-production) through recurring evaluations of facilities' quality management systems and tracking and trending areas for improvement.

A2. Overview

ACSEP is an Aircraft Certification Service program. The Production and Airworthiness Certification Division, AIR-200, is the national focal point for the reporting of ACSEP evaluation results. Order 8100.7 provides guidance and assigns responsibility for the implementation of the ACSEP and are vital tools in assurance of the FAA's mission of continued operational safety. The program assesses the compliance of production approval holders and delegated facilities to the requirements of applicable CFR and FAA-approved data, including compliance to the procedures established to meet those requirements. It also surveys the application of standardized evaluation criteria not required by the CFR to identify national issues that may require development of new or revised regulations, policy, and guidance.

Evaluation criteria for the production approval holders are further divided into 17 system elements for detailed data collection and reporting. The 17 system elements are:

- Organization and Responsibility
- Design Data Control
- Software Quality Assurance
- Manufacturing Processes
- Special Manufacturing Processes
- Statistical Quality Control (SQC)
- Tool and Gauge
- Testing
- Nondestructive Inspection
- Supplier Control
- Nonconforming Material
- Material Handling/Storage
- Airworthiness Determination
- FAA Reporting Requirements
- Internal Audit
- Global Production
- Manufacturing Maintenance Facility

These system elements contain criteria that assess compliance to the various requirements of the CFR, FAA-approved data, and implementation of accepted industry practices. In total there are 228 evaluation criteria in the manufacturing portion of ACSEP. However, the number of evaluation criteria contained in these system elements varies and is not equally proportioned to each facility type. The amount of variation is due to the CFR requirements and industry practices for the different facility types. The 17 system elements vary in proportion from a high side of 26 evaluation criteria or 12 percent of the total for Manufacturing Processes to a low side of two evaluation criteria or 1 percent for Internal Audit (reference *figure A-1*).

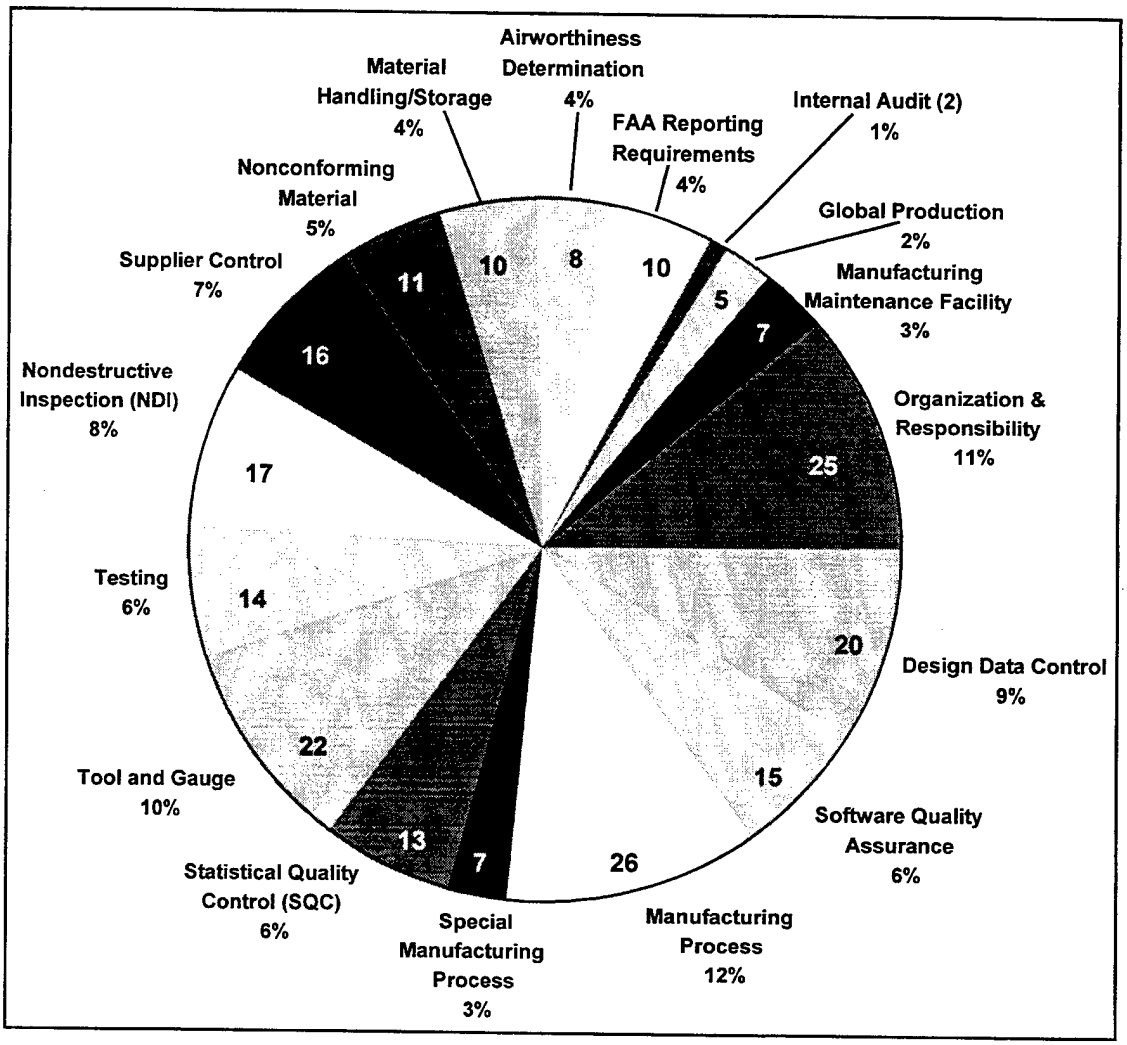

Figure A-1. —Evaluation criteria distribution within the 17 system elements of ACSEP for production approval holders.

Evaluation criteria for delegated facilities are divided into ten system elements. The ten system elements are:

- Organization and Responsibility
- Design Data Approval
- Testing
- Airworthiness Certification
- Continued Airworthiness
- Project Management
- Design Change Approval
- Conformity Inspection
- FAA Notification
- Audit

Similar to the system elements for production approval holders, these system elements contain criteria that assess compliance to the various requirements of the CFR, FAA-approved data, and implementation of accepted industry practices. In total there are 114 evaluation criteria in the delegated facility portion of ACSEP. However, the number of evaluation criteria contained in these system elements varies. The amount of variation is due to the CFR requirements and industry practices. The 10 system elements vary in proportion from a high side of 27 evaluation criteria or 23 percent of the total for Project Management to a low side of 4 evaluation criteria or 4 percent for Audit and FAA Notification (reference *figure A-2*).

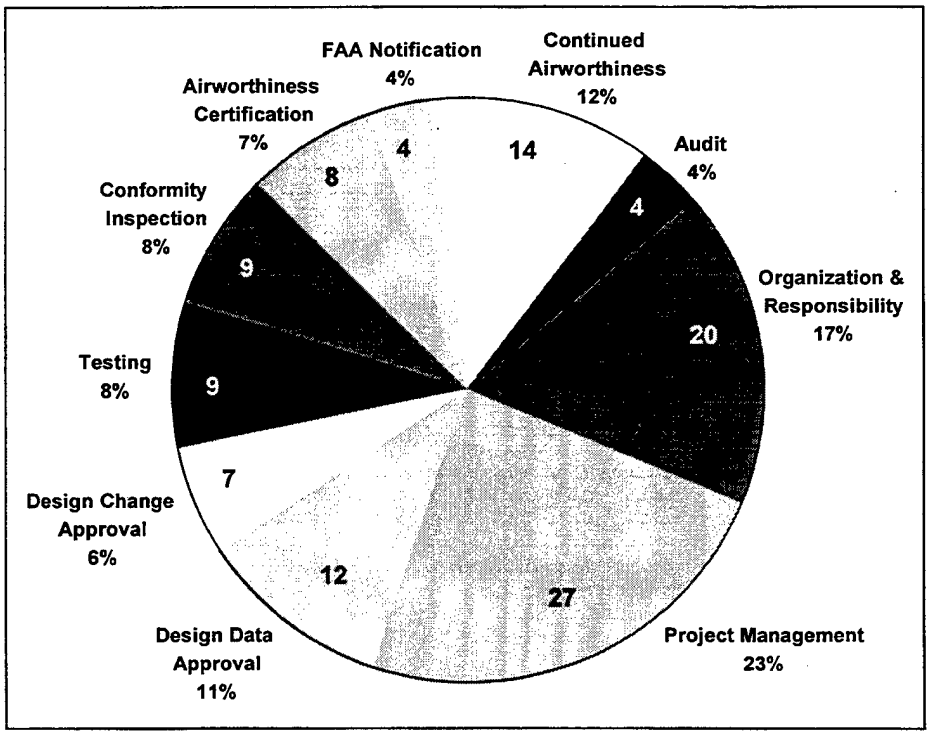

Figure A-2. —Evaluation criteria distribution within the 10 system elements of ACSEP for delegated facilities.

A3. Evaluations and Evaluators

The ACSEP utilizes teams of FAA engineering, flight test, and manufacturing inspection personnel to evaluate production approval holders and delegated facilities. Upon completion of each ACSEP evaluation, the team leader prepares a report and forwards it to the Certificate Management Office (Manufacturing Inspection Office or Aircraft Certification Office, as applicable) which provides it to the Aviation Safety Inspector (ASI) and/or the Assigned Engineer (AE) responsible for the evaluated facility. A copy of the report is also provided to AIR-200 for entry into the ACSEP database. The ACSEP database contains administrative information on facilities evaluated, status of qualified team members and team leaders, responses to rating criteria contained in the evaluation system elements, along with findings and observations noted. Additionally, the ACSEP Master Schedule, which is prepared annually, is maintained by AIR-200 together with the directorate coordinators. The scheduling database is updated and posted to a service wide electronic mail bulletin board on a monthly basis ensuring the Aircraft Certification Service offices are kept current of ACSEP evaluation cancellations, date changes, and recent additions.

The frequency at which production approval holders are scheduled for evaluation is determined by Resource Targeting. The design of Resource Targeting began in 1994 with the following objective: use a systematic, analytic approach to focus the FAA's limited resources on evaluating those facilities with the greatest potential safety impact. The main way this objective was to be met was to adjust the frequency at which facilities would be evaluated. Resource Targeting uses a process of assessing the risks and scheduling those facilities with the greatest perceived risk more frequently than facilities with less perceived risk. Annually, each approval holder is assessed with 21 safety factors and the criticality of the parts they manufacture. The 21 safety factors and part criticality are split into two aggregate factors: system strength and inherent risk. System strength is a measure of how capable the quality system is of ensuring that parts will be manufactured according to FAA-approved data. Inherent risk measures the risk that a part failure would have on continued operational safety. The collective score of the two aggregate-factors determines which of the four RT groups is assigned to the facility. Its RT group determines the frequency at which a facility is evaluated:

RT group I:	evaluated every 16 to 24 months
RT group II:	evaluated every 24 to 36 months
RT group III:	evaluated every 32 to 48 months

Delegated facilities are scheduled for evaluation according to their delegation: DOA and DAS facilities are scheduled every 24 months and SFAR-36 facilities are scheduled for evaluation every 36 months.

At the conclusion of an ACSEP evaluation, a post-evaluation conference is held with the evaluated facility management and any issues, findings, and/or observations are reviewed. The ASI and/or AE responsible for facility surveillance pursue any findings

that require formal corrective action. The ASI and/or AE inform the facility of the findings and request corrective action though a Letter of Investigation, when deemed appropriate.

The ACSEP also includes a Quality Improvement Program. Data from the evaluation feedback reports and evaluation reports are used to prompt improvements in the program. Continuous improvement teams established in each directorate and in headquarters review suggestions, comments, and results of the evaluations. The directorate teams act upon improvements that can be implemented locally; improvements that affect the national program are referred to a dedicated National Continuous Improvement Team (NCIT) made up of FAA Aviation Safety Inspectors, Aerospace Engineers, and Flight Test Pilots representing the directorates and headquarters. Managers representing the Aircraft Certification Management Team (ACMT), Aircraft Certification Office Management Team (ACOMT), and Manufacturing Inspection Management Team (MIMT) are also members of the National Continuous Improvement Team (NCIT). After a comprehensive review of the data, the NCIT recommends changes or clarification to current policy. Recommended changes are forwarded to the Aircraft Engineering Division (AIR-100) or the Production and Airworthiness Certification Division (AIR-200) for further review and possible implementation.

The AIR organization is responsible for conducting evaluator training. This is accomplished in association with the FAA Academy with AIR-200 providing instructors. These instructors are experienced national evaluation team leaders who bring real life experiences into the classroom. While one instructor presents the course materials, the other critiques the presentation/materials and notes comments from students. The critique and notes are reviewed and improvements incorporated facilitating a continuous improvement process. Additionally, issues found in the field are also integrated into the course making it even more comprehensive and continuously improving it.

APPENDIX B. DEFINITIONS

Approved Production Inspection System (APIS) – Federal Aviation Administration (FAA) production approval issued to a manufacturer of an aircraft, aircraft engine, or propeller being manufactured under a type certificate only.

Assigned Engineer – An FAA engineer to whom the Aircraft Certification Office manager has assigned responsibility relating to ACSEP evaluations at a particular design approval facility.

Compliance – for the purposes of this report, compliance refers to a facility's business practices being consistent with published procedures and/or policies. These procedures/policies include: internal procedures/policies not requiring FAA approval, FAA-approved data, and the CFR.

Compliance Rate – the proportion of facilities whose business practices were found to be in compliance with published procedures and/or policies at the time of an ACSEP evaluation. These procedures/policies include: internal procedures/policies not requiring FAA approval, FAA-approved data, and the CFR.

Criteria – the basic element of an ACSEP evaluation. Criteria are used to plan the depth of the evaluation and to document the results of the evaluation in a standardized manner. The criteria are grouped into systems and system elements.

Delegated Facility – a facility undertaking DOA, DAS, or SFAR-36 activity.

Delegation Option Authorization (DOA) – an organization or facility authorized by the FAA to accomplish type, production, and airworthiness certification of certain products as specified in CFR § 21.231(a).

Designated Alteration Station (DAS) – an organization or facility authorized by the FAA to issue supplemental type certifications, experimental certificates, and amended standard airworthiness certificates in accordance with its FAA-approved procedures manual.

Established Industry Practice – a widely followed method of operating that achieves consistent performance of specific functions (i.e., calibration recall system, internal audit system, and statistical process control).

Facility – for this report, any production approval holder, delegation, or priority part supplier.

CFR-based Observation – an occurrence of FAA-approved data not in compliance to the Code of Federal Regulations (CFR).

Federal Aviation Regulations (FAR) – regulations listed in Title 14 (Aeronautics and Space) of the CFR.

Finding – systemic noncompliance to the CFR, FAA-approved data (or in the case of supplier facilities, the purchasing instrument), or a safety-related noncompliance.

Issue – An inconsistency between the actual operating practices of a facility and the CFR, FAA-approved data, or the facility's internal procedures.

Isolated Observation – isolated occurrence of noncompliance to the CFR or FAA-approved data.

Manufacturer's Maintenance Facility (MMF) – defined by CFR § 145.1(c) as a repair station certificate with a limited rating issued to a manufacturer based upon the production approval it holds from the FAA.

National Continuous Improvement Team (NCIT) – a dedicated national team of FAA aviation safety inspectors, aerospace engineers, flight test pilots, and managers representing the directorates and divisions chartered to review the ACSEP periodically for areas of improvement.

Noncompliance – for the purposes of this report, noncompliance refers to a facility's business practices being inconsistent with published procedures and policies at the time of the ACSEP evaluation. These procedures and/or policies include: internal procedures/policies not requiring FAA approval, FAA-approved data, and the CFR.

Noncompliance Rate – the proportion of facilities where at least one business practice was inconsistent with published procedures or policies, or any portion thereof, at the time of the ACSEP evaluation. These procedures and/or policies include: internal procedures not requiring FAA approval, FAA-approved data, and the CFR.

Nonobservance – a failure to comply with self-imposed procedures that are related to, but not required by, the applicable production approval, delegated facility approval, or quality requirements from a parent manufacturing maintenance facility.

Parts Manufacturer Approval (PMA) – an FAA production and design approval issued to manufacturers who produce replacement or modification parts, equipment, components, materials, part processes (replacement and modification, and appliances).

Principal Inspector (PI) – an FAA aviation safety inspector who has been assigned certificate management and/or surveillance responsibility for a PAH, associate facility, or priority part supplier.

Priority Part Supplier (PPS) – any person or organization (including a distributor) that furnishes priority parts (as defined in Order 8120.2) to a PAH.

Production Approval Holder (PAH) – the holder of a PC, APIS, PMA, or TSO authorization, who controls the design and quality of a product or part thereof.

Production Certificate (PC) – an FAA production approval issued to a manufacturer of aircraft, aircraft engines, or propellers that has had its Quality Control system examined and approved by the FAA, and that holds one or more of the following: a current type certificate, rights to the benefits of a type certificate under a licensing agreement, or a supplemental type certificate.

Production Certificate Extension (PCEX) – an FAA-approved extension of a specific manufacturer's PC to another facility.

Safety Finding – safety-related noncompliance that requires immediate action.

Special Federal Aviation Regulation No. 36 (SFAR-36) – an organization or facility authorized by the FAA to approve major repairs on a product or article in accordance with its FAA-approved procedures manual.

System element – a logical grouping of several criteria into functional areas. There are 17 system elements for production approval holders and 10 system elements for delegated facilities.

System – the highest level of grouping for the ACSEP criteria. Systems comprise the individual disciplines under which the criteria fall. There are six systems: Management, Engineering, Manufacturing, Quality, Service/Product Support, and Communication with the FAA.

Systemic Issue – either a finding or a systemic observation.

Systemic Observation – systemic nonobservance to other than FAA requirements or FAA-approved data.

Technical Standard Order (TSO) a*uthorization*– an FAA design and production approval issued to a manufacturer for an article which has been found to meet a specific FAA Technical Standard Order.

FY 2000 ACSEP Report Feedback Information

In a constant effort to improve the Aircraft Certification System Evaluation Program (ACSEP), you are asked to provide any relevant feedback to the attached report. This feedback could include views for additional areas of analysis; clarification of subject matter, data, and/or analysis; or general comments or remarks. We appreciate your input.

Feedback:

Check as appropriate

☐ Additional pages attached. Number of pages. _____ ☐ I would like to discuss the above. Please contact me.

Submitted by: _____ Date: _____

Organization: _____

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Phone number where we can contact you during the day: ( ) _____ Fax ( ) _____

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